

1. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

$$4 - 2i \text{ and } -4$$

- A. $b \in [2.8, 5.1], c \in [-12, -11],$ and $d \in [-87, -78]$
B. $b \in [-7.8, -3.5], c \in [-12, -11],$ and $d \in [78, 84]$
C. $b \in [-0.6, 1.1], c \in [3, 7],$ and $d \in [3, 9]$
D. $b \in [-0.6, 1.1], c \in [0, 5],$ and $d \in [-20, -13]$
E. None of the above.
-

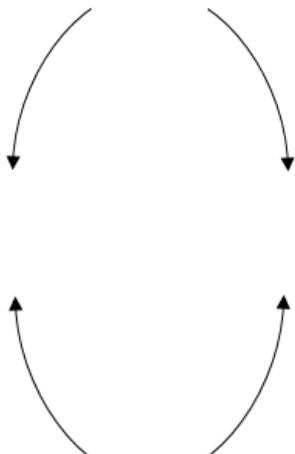

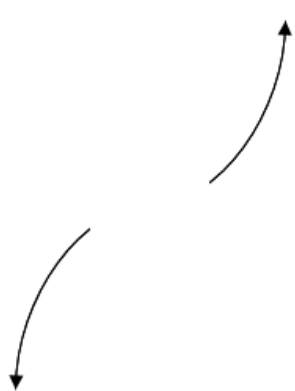
2. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$-6, \frac{1}{3}, \text{ and } \frac{-3}{2}$$

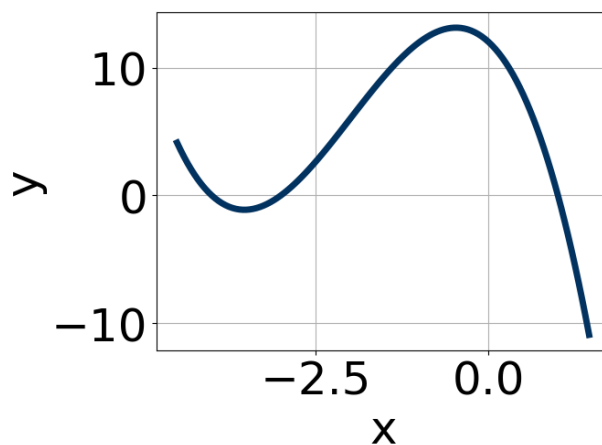
- A. $a \in [6, 12], b \in [-25.3, -24.5], c \in [-64, -61],$ and $d \in [-24, -15]$
B. $a \in [6, 12], b \in [40.1, 45.7], c \in [33, 40],$ and $d \in [-24, -15]$
C. $a \in [6, 12], b \in [-30.7, -26], c \in [-53, -38],$ and $d \in [11, 26]$
D. $a \in [6, 12], b \in [-44.1, -41], c \in [33, 40],$ and $d \in [11, 26]$
E. $a \in [6, 12], b \in [40.1, 45.7], c \in [33, 40],$ and $d \in [11, 26]$
-

3. Describe the end behavior of the polynomial below.

$$f(x) = -6(x + 7)^5(x - 7)^{10}(x - 8)^3(x + 8)^3$$

- B. 
- C. 
- D. 
- E. None of the above.

4. Which of the following equations *could* be of the graph presented below?



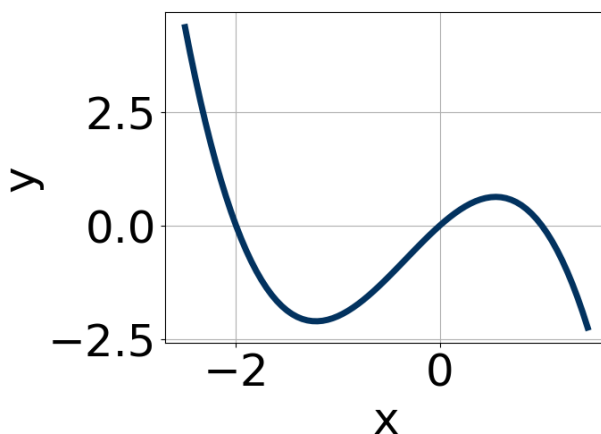
- A. $-10(x + 3)^{10}(x - 1)^{11}(x + 4)^9$
- B. $9(x + 3)^{10}(x - 1)^5(x + 4)^5$
- C. $16(x + 3)^7(x - 1)^7(x + 4)^5$
- D. $-17(x + 3)^{10}(x - 1)^6(x + 4)^{11}$
- E. $-13(x + 3)^9(x - 1)^7(x + 4)^5$

5. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $ax^3 + bx^2 + cx + d$.

$$\frac{1}{4}, \frac{7}{4}, \text{ and } \frac{-2}{3}$$

- A. $a \in [45, 50], b \in [123, 130], c \in [83, 89],$ and $d \in [12, 19]$
B. $a \in [45, 50], b \in [-41, -33], c \in [-70, -66],$ and $d \in [-20, -13]$
C. $a \in [45, 50], b \in [-66, -60], c \in [-43, -33],$ and $d \in [12, 19]$
D. $a \in [45, 50], b \in [-66, -60], c \in [-43, -33],$ and $d \in [-20, -13]$
E. $a \in [45, 50], b \in [64, 70], c \in [-43, -33],$ and $d \in [-20, -13]$
-

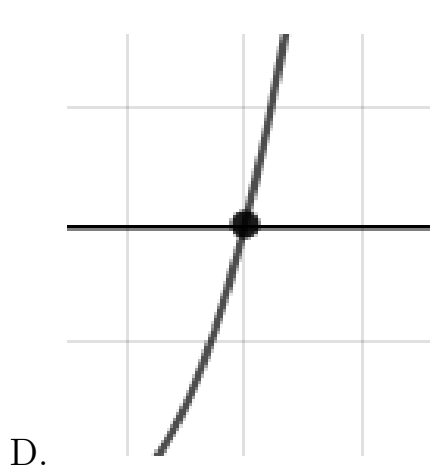
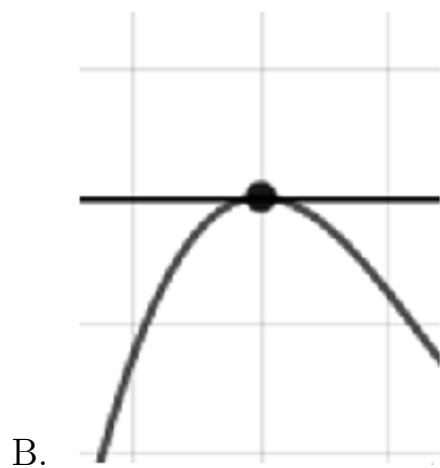
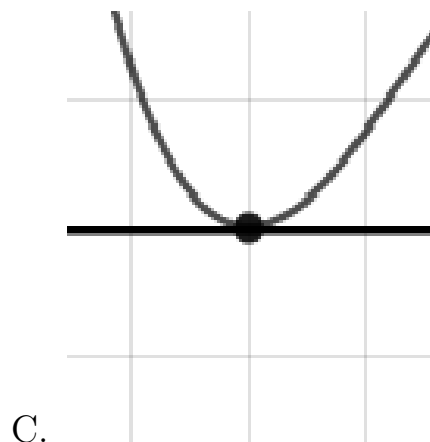
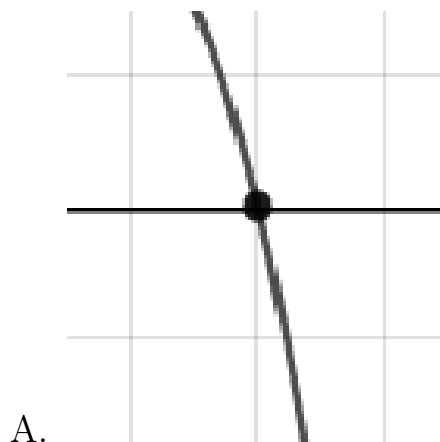
6. Which of the following equations *could* be of the graph presented below?



- A. $11x^9(x+2)^6(x-1)^5$
B. $11x^{11}(x+2)^5(x-1)^5$
C. $-12x^5(x+2)^5(x-1)^9$
D. $-6x^7(x+2)^{10}(x-1)^7$
E. $-9x^6(x+2)^4(x-1)^7$
-

7. Describe the zero behavior of the zero $x = -8$ of the polynomial below.

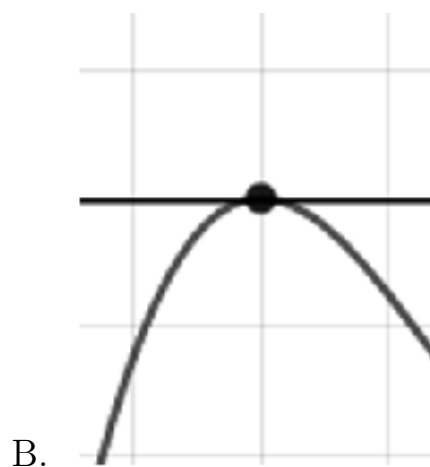
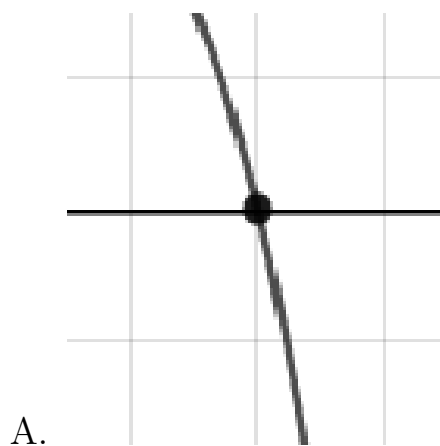
$$f(x) = 3(x+2)^5(x-2)^2(x+8)^7(x-8)^2$$



E. None of the above.

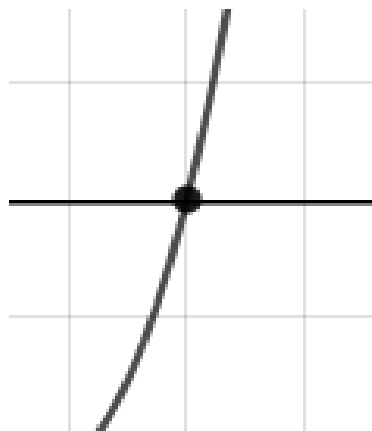
8. Describe the zero behavior of the zero $x = -5$ of the polynomial below.

$$f(x) = 7(x - 5)^2(x + 5)^5(x + 9)^8(x - 9)^{11}$$





C.



D.

E. None of the above.

9. Construct the lowest-degree polynomial given the zeros below. Then, choose the intervals that contain the coefficients of the polynomial in the form $x^3 + bx^2 + cx + d$.

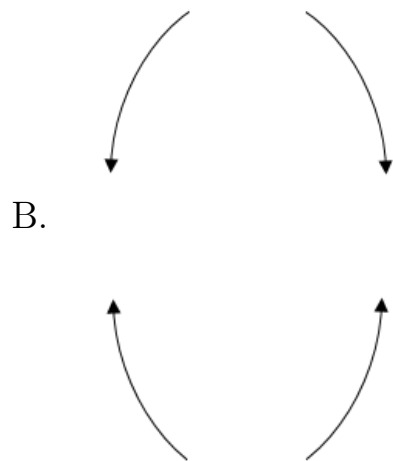
$$-4 + 3i \text{ and } 3$$

- A. $b \in [-0.5, 2], c \in [-15, -4],$ and $d \in [7, 12]$
 B. $b \in [3.6, 8.1], c \in [0, 5],$ and $d \in [-77, -74]$
 C. $b \in [-5.2, 0.5], c \in [0, 5],$ and $d \in [70, 77]$
 D. $b \in [-0.5, 2], c \in [0, 5],$ and $d \in [-14, -5]$
 E. None of the above.

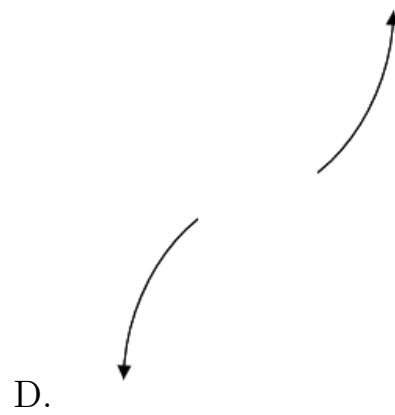
10. Describe the end behavior of the polynomial below.

$$f(x) = 5(x - 6)^2(x + 6)^3(x + 3)^5(x - 3)^7$$





C.



E. None of the above.